Applicants wish to thank Examiner Gallagher for the courtesy he extended in conducting an interview on November 6, 1996 with applicants' representatives (Dorothy Whelan, Amy Watson, and Mick Johnson). During the interview, the background surrounding the invention was discussed, including its accidental discovery and subsequent copying by a competitor. The importance of the dimensionally stable film, and the characteristics of such a film, were also discussed.

As discussed at the interview, the present invention relates to a method for modifying the surface of a substrate using an article that includes a "melt-flowable composition" and a "dimensionally stable film" for controlling the melt-flow properties of the composition. Not every backing material qualifies as a "dimensionally stable film," nor does every adhesive composition qualify as a "melt-flowable composition." A "melt-flowable composition" is a composition that initially softens when heated and then proceeds to flow and wet out the surface to which it is applied (see page 6, lines 15-21, of the specification). This is consistent with the applicants' objective of using such compositions as sealants, e.g., for automotive roof ditches. In order to prevent gaps that could lead to leaks, the composition must flow when heated to wet the surface being sealed. It is not sufficient that the composition merely soften when heated.

The specification defines a "dimensionally stable film" at page 28, lines 9-22:

> Both thermoset and thermoplastic films should be dimensionally stable at the temperatures to which they are exposed. By dimensionally stable, it is meant that at [sic] the films have sufficient integrity at the temperatures of use, and particularly, during the heat curing cycle of the melt sealing layer at about 120C to 200C for 20 to 40 minutes, so they do not melt and flow. Also the films do not exhibit wrinkling when they are heated to the melt sealing temperature and subsequently cooled. The films also have enough integrity to prevent entrapped air bubbles in the melt sealing layer from blowing through the film and causing a defect. Preferably, the films, after they have been laminated to a surface, will exhibit a downweb and crossweb shrinkage of less than about 5%, more preferably, less than about 3%, and most preferably, less than about 2%. In highly preferred embodiments, the films will exhibit less than 1% shrinkage in the downweb direction, and less than 0.5% in the crossweb direction.

The purpose of the dimensionally stable film is to control the flow of the melt-flowable composition to ensure that the composition only wets the designated area of the substrate. In some instances, the dimensionally stable film also controls the shrinkage of the composition, preferably confining shrinkage primarily to the downweb direction. For example, in the case of roof ditch moldings, controlling shrinkage in this manner minimizes the formation of drips or balls of sealant in the end of the roof ditch (where tolerances are tight). As Mr. Johnson explained during the interview, such drips or balls prevent the roof ditch molding from fitting properly, resulting in leakage.

The dimensionally stable film also addresses another problem confronting the applicants (as well as their competitors), namely, the condition of the surface that results

following application of the sealing composition. If the melt-flowable composition is allowed to flow uncontrollably, the resulting surface following cooling becomes irregular and bumpy. This presents several problems. First, in the case where it is desired to bond, e.g., a decorative molding over the surface, the bumps lead to gaps between the sealant surface and the molding, resulting in delamination. As Mr. Johnson explained during the interview, the molding simply pops off. Second, in applications requiring a painted surface (e.g., where the surface is designed to be visible), the bumps cause the paint to crack and flake off.

The dimensionally stable film solves these problems. Because it has a higher modulus than the underlying melt-flow composition (and thus is stiffer), it resists flowing under the elevated temperatures used to cause the underlying melt-flow composition to flow and wet the substrate. It also retains its surface topography following processing. Thus, for example, if the surface was initially smooth, it remains smooth following processing, thereby facilitating bonding and painting steps. On the other hand, if it bore an embossed design, that design remains substantially unaltered following processing.

As Mr. Johnson stated during the interview, the ability of the dimensionally stable film to solve the problems plaguing the use of melt-flowable compositions for applications such as roof ditch molding was surprising. Indeed, the applicants accidentally discovered the utility of the film when they prepared a melt-flowable composition on a stiff biaxially

oriented PET backing and then inadvertently neglected to remove the backing when they melted the composition. Moreover, as Mr. Johnson pointed out during the interview, the applicants' primary competitor paid the discovery the ultimate tribute when it copied the use of the dimensionally stable film after its melt-flowable composition failed in side-to-side tests with the applicants' dimensionally stable film-containing products.

Claims 6-8, 16, 20-26, and 32 stand rejected under §102 and, in the alternative, §103 over Wagner et al., U.S. 3,837,984 ("Wagner"). As grounds for obviousness, the Examiner states that "[a]ny differences which might possible/conceivably exist ... are held/seen NOT to constitute patentable differences." Applicants respectfully request that this rejection be reconsidered and withdrawn.

Wagner describes thermosetting adhesive articles featuring a nitrile phenolic adhesive applied to a support sheet. The support sheet may be a polyurethane such as a polyether-based polyurethane or silicon rubber. Wagner describes two uses for these articles. In one embodiment, the article, in the form of a tape, is affixed to the side of an automobile and used to secure molding clips in place. The clips are then used to mount a molding strip onto the side of the automobile. In a second embodiment, the article is used to bond a fastener to a surface. For example, the article is formed in the shape of a ring and used to secure a threaded grommet in a bulkhead.

The articles described in Wagner contain neither a "melt-flowable composition" nor a "dimensionally stable film." The nitrile phenolic adhesive merely softens when heated--it does not flow and wet out a surface. This is consistent with Wagner's intended uses for the article, neither of which involves melt sealing. Wagner merely requires an adhesive composition that softens when heated so that it can be adhered to a substrate. Indeed, for Wagner's purposes, a melt-flowable composition (as opposed to a heat-softenable material) would be undesirable. For example, in the case of the molding clips held against the vertical automobile side, use of a melt-flowable composition would cause the clips to slide down the side of the automobile.

The particular polyurethane and silicon rubber sheets Wagner describes are not "dimensionally stable films," as that term is defined in the specification. The purpose of the sheet in Wagner's article is to provide a conformable backing that enables the article to be applied in the desired location. Consistent with this objective, Wagner emphasizes that each sheet is flexible (at col. 3, lines 70-73 and col. 4, lines 36-38):

> The tape 10 is formed by a flexible support sheet or layer 12 of polyurethane, preferably a polyether-based thermoplastic polyurethane.
>
> * * *
>
> Silicon rubber support sheet will provide a more flexible thermosetting adhesive tape element for use in bonding together complicated configurations.

These flexible films soften when heated and thus could not perform the role that the instant claims require the

dimensionally stable film to perform. Indeed, for Wagner's purposes a high modulus, dimensionally stable film would be undesirable because it would limit the ability of the article, prior to heating, to conform to the substrate of interest. For example, a stiff, dimensionally stable film would not be suitable for use as a ring intended to be wedged into an opening for securing a threaded grommet.

Wagner's objectives and the applicants' objectives are completely unrelated. The differences between the Wagner's articles and the applicants' articles, and the fact that neither would be suitable for the other's objectives, reflect this fact. Under these circumstances, the claimed invention is neither anticipated by, nor obvious in view of, Wagner.

Claims 10-13 stand rejected over Wagner combined with Pletcher, U.S. 4,173,506 ("Pletcher"). Applicants respectfully request that this rejection be withdrawn as well. Pletcher is cited for teaching other types of dimensionally stable films. Pletcher's films, however, are not "dimensionally stable."

Pletcher describes tapes in which a thermoplastic polymer may be provided on a variety of backings. The backings are used merely as a convenient means for transporting the adhesive composition. For example, at col. 9, lines 27-50, Pletcher describes transfer tape embodiments in which the backing transports the tape and is then removed prior to melting the adhesive. Consistent with this objective, the backings Pletcher describes (at col. 9, lines 6-12) are conventional tape backings.

They do not qualify as dimensionally stable films. For example, Pletcher lists "polyethylene terephthalate" as a suitable backing. However, it is oriented polyethylene terephthalate films which applicants claim. The oriented films, which Pletcher does not describe, have a higher modulus than the unoriented polyethylene terephthalate films typically used as tape backings. Similarly, not all polyolefins and polyurethanes form dimensionally stable films. The soft polyether-based polyurethanes Wagner describes, for example, are not dimensionally stable.

Claims 9 and 28 stand rejected under §103 over Wagner combined with Schappert et al., U.S. 4,822,683 ("Schappert"). Schappert describes curable, melt-flowable epoxy-polyester blends. Such blends would be unsuitable for Wagner's purposes because, as discussed above, Wagner requires a composition that merely softens without flowing. Moreover, neither Wagner nor Schappert describes dimensionally stable films; thus, even in combination, Wagner and Schappert fail to yield the claimed invention. Accordingly, applicants respectfully request that this rejection be withdrawn.

Claims 17-19 and 27 stand rejected under §103 over Wagner combined with Kan, U.S. 4,631,233 ("Kan"). Kan is cited for teaching adhering latex film (e.g., paint) to a polymeric substrate by forming covalent bonds between the film and the substrate. Kan, however, does not address the problem which applicants faced of preventing the formation of cracks and bumps

in a painted surface following application and cooling of a melt-flowable composition such as a sealant.

There would be no reason to combine Kan with Wagner. Wagner does not describe tapes designed to present a visible surface. Thus, there would be no motivation for a person of ordinary skill to paint the surface of Wagner's tapes in the first place. Moreover, neither Kan nor Wagner, alone or in combination, teaches melt-flowable compositions combined with a dimensionally stable film. Thus, even in combination, Kan and Wagner would fail to yield the claimed invention. Accordingly, applicants respectfully request that this rejection be withdrawn.

Turning to the remaining rejections, claims 6-32 stand rejected under §112, first paragraph, and the specification stands objected, for failing to provide an adequate written description with respect to the following claimed features: (a) a dimensionally stable film that controls the melt-flow behavior of the melt-flowable composition, (b) a dimensionally stable film having a pre-selected surface topography (claims 6 and 28-29), and (c) bonding an article to the dimensionally stable film (claim 20). Applicants urge the Examiner to reconsider and withdraw this rejection.

The purpose of the written description requirement is to "convey with reasonable clarity to those skilled in the art that, as of the filing date sought, he or she was in possession of the invention." Vas-Cath Inc. v. Mahurkar, 19 USPQ2d 1111, 1117 (Fed. Cir. 1991). The written description requirement does

not require the specification to contain the exact language used in the claims. Thus, for example, in In re Wright, 9 USPQ2d 1649, 1651 (Fed. Cir. 1989), the Court held that the applicant's amended claims, calling for microcapsules "not permanently fixed" to a support, satisfied the written description requirement, even though the specification did not include the "not permanently fixed" language, where the specification as a whole taught the absence of permanently fixed microcapsules. The Court stated (id.):

> As also pointed out in Smith and as admitted by the board, "the claimed subject matter need not be described in haec verba in the specification in order for that specification to satisfy the description requirement." The fact, therefore, that the exact words here in question, "not permanently fixed", are not in the specification is not important.

The Court then referred to the examples in the specification which described the importance of not allowing the microcapsules to change position until an image had been formed. Id. The Court stated that the examples implicitly demonstrated that the microcapsules were "not permanently fixed." Id.

Here, the specification likewise adequately describes the invention as now claimed, even though the exact language used in the claims does not necessarily appear in the specification.

With respect to claim language calling for the dimensionally stable film to control the melt-flow behavior of the melt-flowable composition, support is found, for example, at page 28, lines 23-25 of the specification, which states (emphasis added):

> Depending on the application, it may be desirable to have a certain amount of shrinkage in the [dimensionally stable] film to help control the flow of the underlying melt sealing material.

With respect to claim language calling for the dimensionally stable film to have a pre-selected topography which is retained following cooling, support is found, for example, at page 7, lines 8-17; page 27, lines 17-19; and page 28, lines 9-22. When read as a whole, as In re Wright requires, these passages demonstrate the applicants' recognition that in certain instances it is desirable to provide an article having a smooth surface (e.g., where the surface is visible or designed to be painted), while in others it is desirable to provide an article having a pre-determined design on its surface (e.g., emblems and insignias). In other words, the applicants recognized that depending upon the intended use of the article, certain surface topographies were desirable. The passages further demonstrate the applicants' appreciation that these topographies could be achieved using a dimensionally stable film. For example, at page 28, lines 9-22, applicants describe properties of the film (ability to resist melting and flowing at the elevated temperatures use for sealing, resistance to wrinkling, minimal or controlled shrinkage) designed to achieve the objective of a certain surface topography. The specification, therefore, when read as a whole, links the properties of the dimensionally film to the ability to produce an article having certain surface characteristics. Accordingly, the specification satisfies the

written description requirement with respect to the language in question.

The final claim language to which the Examiner objects is found in claim 20 calling for the dimensionally stable film to have a smooth, bondable surface and including the step of bonding a component to the surface of the film. Support for this language is found, for example, at page 30, lines 8-12, which describes bonding a second film to the surface of the dimensionally stable film. Thus, this feature is also adequately described for the purposes of §112, first paragraph.

Claims 14-15 and 29-31 stand rejected under §112, first paragraph, on the ground that the claims are only enabled for dimensionally stable films prepared from fully thermoset epoxy-polyester blends. Applicants urge the Examiner to reconsider and withdraw this rejection.

The claims refer to a "thermosetting" composition. A "thermosetting" composition is a composition which can undergo crosslinking. Such compositions thus include both materials that are not crosslinked and materials that are partially crosslinked (i.e., "B-staged" materials).

At page 27, lines 20-22, the specification describes "thermoset" epoxy-polyester materials "that have been crosslinked" for use as a dimensionally stable film. The term "thermoset," as used in the art and in the present application, includes materials which are both fully crosslinked and partially crosslinked. Therefore, the applicants teach both fully and

partially thermoset material, so long as that material meets the criteria for a dimensionally stable film set forth at page 28, lines 9-22. The term "thermosetting" used in the claims is merely another way of describing the partially thermoset materials. In other words, a partially crosslinked material can be described either as "thermosetting" or "thermoset."

The specification also teaches thermosetting materials that are uncrosslinked. For example, the specification describes the preparation of a dimensionally stable film as follows (at page 29, lines 23-27; emphasis added):

> Combination films can be formed by conventional means such as adhesively laminating the films together with, for example, a hot melt adhesive or a laminating adhesive, coextruding the films, and extrusion coating the film onto the more stable film <u>and optionally curing the coating</u>.

By stating that the coating is "optionally cured," the specification contemplates thermosetting compositions which are not crosslinked, but are capable of being crosslinked if desired. The claims thus satisfy the requirements of §112.

In view of the above, it is respectfully submitted that all of the claims now in the application are in condition for allowance, and such action is requested. If there are any additional charges, or any credits, please apply them to Deposit Account No. 06-1050.

Respectfully submitted,

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